

1. Record Nr.	UNINA9910146413003321
Autore	Zhao Yue <1961->
Titolo	Smart light-responsive materials [[electronic resource]] : azobenzene-containing polymers and liquid crystals // Yue Zhao And Tomiki Ikeda
Pubbl/distr/stampa	Hoboken, N.J., : Wiley, c2009
ISBN	1-282-11331-3 9786612113314 0-470-43909-2 0-470-43908-4
Descrizione fisica	1 online resource (542 p.)
Altri autori (Persone)	IkedaTomiki
Disciplina	620.1 620.1/1295 620.11295
Soggetti	Smart materials Polymers - Optical properties Azo compounds Liquid crystals
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Includes index.
Nota di contenuto	SMART LIGHT-RESPONSIVE MATERIALS; CONTENTS; Preface; Contributors; 1 AZOBENZENE POLYMERS FOR PHOTONIC APPLICATIONS; 1.1. Introduction to Azobenzene; 1.1.1. Azobenzene Chromophores; 1.1.2. Azobenzene Photochemistry; 1.1.3. Classes of Azobenzene Systems; 1.2. Photoinduced Motions and Modulations; 1.2.1. Molecular Motion; 1.2.2. Photobiological Experiments; 1.2.3. Photoorientation; 1.2.4. Domain Motion; 1.2.5. Macroscopic Motion; 1.2.6. Other Applications of Azobenzenes; Acknowledgment; References; 2 PHOTO-INDUCED PHENOMENA IN SUPRAMOLECULAR AZOBENZENE MATERIALS; 2.1. Introduction 2.2. Photoorientation 2.3. Surface Relief Gratings; 2.4. Conclusion and Outlook; References; 3 PHOTODEFORMABLE MATERIALS AND PHOTOMECHANICAL EFFECTS BASED ON AZOBENZENE-CONTAINING POLYMERS AND LIQUID CRYSTALS; 3.1. Introduction; 3.2. Photodeformable Materials Based on Azobenzene-Containing Polymer

Gels; 3.3. Photodeformable Materials Based on Azobenzene-Containing Solid Films; 3.4. Photodeformable Materials Based on Azobenzene-Containing LCs; 3.4.1. LCs and LCEs; 3.4.2. General Methods of Preparation of LCEs; 3.4.3. Temperature-/Electricity-/pH-Responsive LCEs
3.4.4. Photoresponsive Behavior of Chromophore-Containing LCs3.4.5. Light-Responsive LCEs; 3.5. Summary and Outlook; References; 4 AMORPHOUS AZOBENZENE POLYMERS FOR LIGHT-INDUCED SURFACE PATTERNING; 4.1. Surface Mass Transport; 4.1.1. Experimental Observations; 4.1.2. Patterning; 4.1.3. Dependence on Material Properties; 4.1.4. Photosoftening; 4.1.5. Photomechanical Effects; 4.1.6. Measuring Gratings; 4.1.7. Dynamics; 4.2. Mechanism; 4.2.1. Thermal Considerations; 4.2.2. Asymmetric Diffusion; 4.2.3. Mean-Field Theory; 4.2.4. Permittivity Gradient Theory; 4.2.5. Gradient Electric Force
4.2.6. Isomerization Pressure4.2.7. Applications of Surface Mass Transport; 4.3. Conclusions; Acknowledgment; References; 5 AZO POLYMER COLLOIDAL SPHERES: FORMATION, TWO-DIMENSIONAL ARRAY, AND PHOTORESPONSIVE PROPERTIES; 5.1. Introduction; 5.2. Azo Polymer Synthesis; 5.3. Self-Assembly of Polydispersed Amphiphilic Azo Polymers in Solutions; 5.3.1. Characteristics of Polydispersed Azo Polymer Self-Assembly; 5.3.2. Colloidal Sphere Formation and Characterization; 5.3.3. Colloidal Sphere Formation Mechanism; 5.3.4. Hybrid Colloids Composed of Two Types of Amphiphilic Azo Polymers
5.4. Photoresponsive Properties of Azo Polymer Colloidal Spheres5.4.1. Deformation Induced by Interfering Ar(+) Laser Beams; 5.4.2. Deformation Induced by a Single Ar(+) Laser Beam; 5.4.3. Photoresponsive Properties of Hybrid Colloids; 5.5. Photoresponsive 2-D Colloidal Array and Its *in situ* Structure Inversion; 5.5.1. Colloidal Array and Photoinduced Dichroism; 5.5.2. Porous Structure from *in situ* Colloidal Array Structure Inversion; 5.6. Closing Remarks; References; 6 AZOBENZENE-CONTAINING BLOCK COPOLYMER MICELLES: TOWARD LIGHT-CONTROLLABLE NANOCARRIERS
6.1. What is the Use of Light-Controllable Polymer Micelles?

Sommario/riassunto

This book reviews the cutting-edge significant research in the field of smart light-responsive materials based on azobenzene polymers and liquid crystals. Emphasis is placed on the discovery of new phenomena from the past 5 years, their underlying mechanisms, new functionalities, and properties achieved through rational design. Edited by leading authorities in the field, Zhao and Ikeda, the chapters are authored by an internationally-recognized team of experts from North America, Europe, and Asia. Smart Light-Responsive Materials will serve to catalyze new research that will lead this field ov
